

# POWER SOURCE<sup>®</sup>

A Corporate Publication of Santee Cooper

SUMMER 2005



*Cypress Gardens — After 73 Years, It's Still A Gem*

## POWER OF BALANCE IS ESSENTIAL IN MEETING CUSTOMER NEEDS

Santee Cooper, like the entire utility industry, is operating in a new era.

In today's environment, we have the challenge to continue providing excellent customer service while balancing the needs for reliable, low-cost power and water. It's why we exist.

To meet this challenge, Santee Cooper has to use smart planning, perceptive management and skilled operations to meet our goals of effectively and efficiently providing the desired levels of reliability, economy and service. That's the power of balance.

Balance has always been important to Santee Cooper. While meeting the power needs of our customers and providing a source of energy to stimulate economic growth and development, we have worked hard to protect our environment and help improve the quality of life for the people of South Carolina.

Since Feb. 17, 1942, when the first electricity flowed from its turbine generators, Santee Cooper has grown to become the source of power for almost 2 million South Carolinians. As South Carolina continues to grow in population, expand its work force, increase its productivity and diversify its technology, Santee Cooper will advance its capability to meet the changing

energy needs and demands of the Palmetto State.

This will require new sources of energy and water to meet the increased appetite of our growing economy. It will also require increased operating efficiency, more effective use of our natural and man-made resources and improved and innovative delivery of customer service.

Building new facilities to generate electricity and provide water to meet growing needs is a forward-thinking, nonstop process. The resources for providing these services have to be planned, constructed and placed into service, ready to meet the needs as they arrive. In other words, when the train arrives at the station, the waiting room has to be completed and ready for customers to use.

Looking ahead, we are investing more than \$1.4 billion to build additional generation at the Cross Station in Berkeley County, the largest capital expenditure in Santee Cooper's history. This will be the most efficient and environmentally compatible coal-fired generation in the state, and it will increase Santee Cooper's capability, as well as lower future fuel costs by lessening the need to either buy or use purchased power and natural gas.



Lonnie Carter  
President and Chief Executive Officer

*Lonnie A. Carter*

Environmental stewardship is also important to Santee Cooper as we work to strike a balance between challenging new regulations and our ability to produce low-cost power.

Our commitment to our customers, bondholders, employees and to the people of South Carolina is to do our best to manage and operate Santee Cooper in a manner that provides a proper balance of all interests and ensures continuation of its great value to the state of South Carolina.



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## 4. South Carolina's Grand Strand: Growing Like Gangbusters

By Jill Watts  
Photography by Jim Huff



## 20. Waging War on the Mosquito: an Ongoing Challenge

By Jim Huff  
Photography by Jim Huff



## 27. The Mosquito and its Bite

By Jerry Stafford  
Photography by Jim Huff



## 28. Cypress Gardens: After 73 Years, It's Still a Gem

By Willard Strong  
Photography by Jim Huff

## 35. NewSource

Purchase a Santee Cooper Mini-Bond This Fall and  
You'll be Investing in South Carolina's Future  
By Beth Fondren  
Photography by Jim Huff



## 12. JW Aluminum: The King of Foil

By Willard Strong  
Photography by Jim Huff

**Cover:** A cluster of *Lantana camara* blossoms in the butterfly house at Cypress Gardens. The common lantana is a rugged, brilliantly colored evergreen shrub from the tropics and is a favorite species for butterflies.  
Photo by Jim Huff

Printed on recycled paper.



# SOUTH CAROLINA'S GRAND STRAND: GROWING LIKE GANGBUSTERS

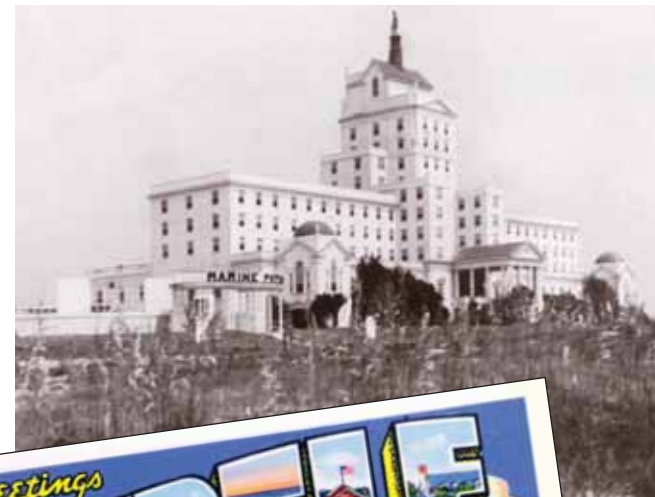
An avalanche of new development on the Grand Strand brings both welcome smiles and looks of anxiety from residents, visitors and members of the business and tourism community, as the area makes way for additional restaurants, stores, shopping venues, theme parks and oceanfront towers.

In past decades, growth along the 60-mile stretch has been like the tides on the Atlantic, with an ebb and flow that seemed to say growth comes and goes. But today's growth, say some, feels more like a ride on one of the Grand Strand's roller coasters, as the car races along at breakneck speed. The challenges are many as Santee Cooper keeps up with this gargantuan growth.

## With Growth Comes Change

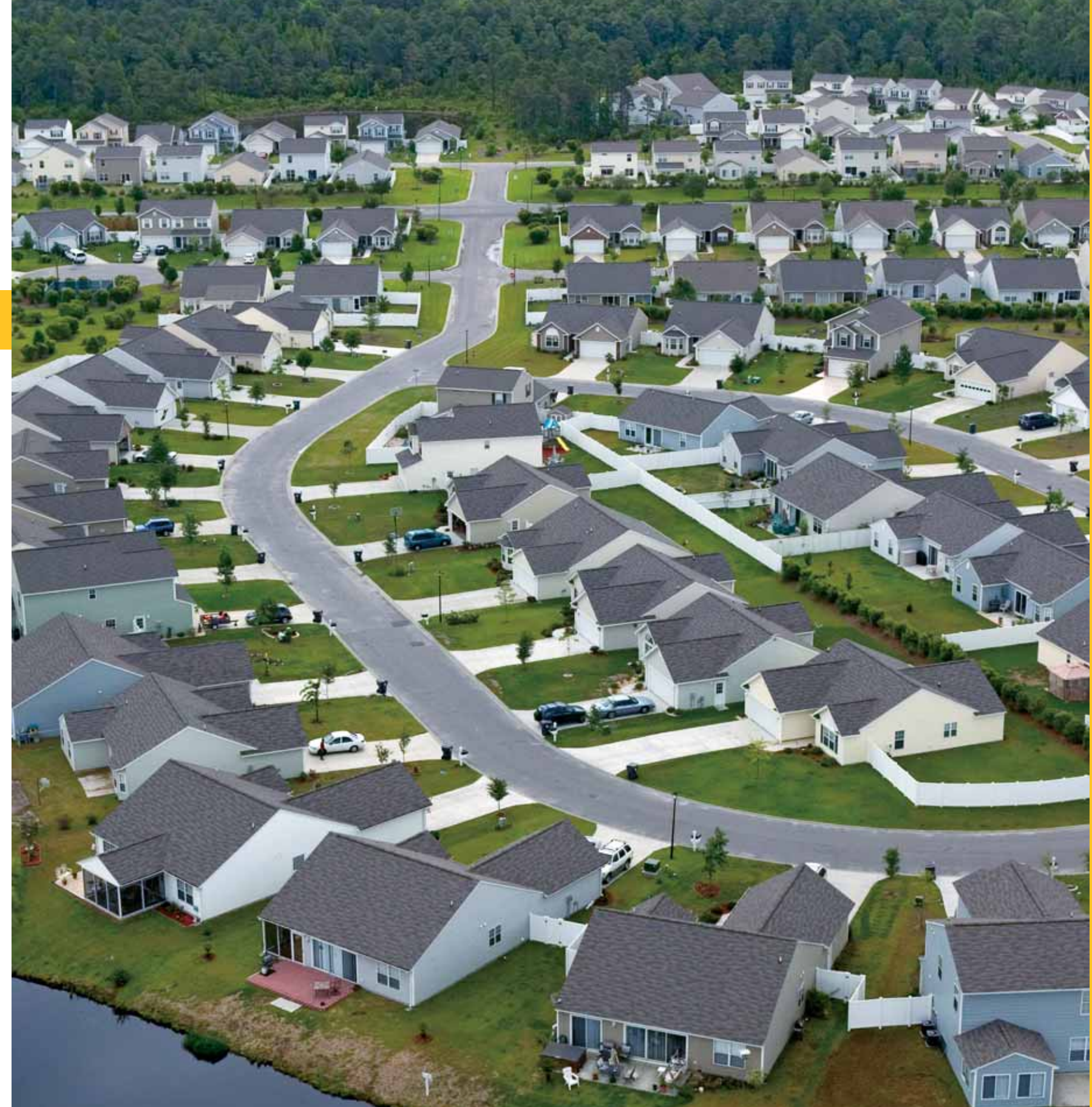
In 1901, the Seaside Inn opened and became the first oceanfront hotel in Myrtle Beach. Even this significant event couldn't foretell what changes would take place in the 100-plus years to come.

The 1920s brought golf to the Grand Strand when the famous Pine Lakes International Golf and Country Club was constructed. The appeal for a retreat to the beach grew when, in the 1930s, the grand Ocean Forest Hotel opened, with 300 rooms and an elegance rivaling the finest accommodations anywhere. In the 1960s, the Grand Strand took its place among nationally known resort destinations.



**Above:** The historic Ocean Forest Hotel was at the forefront of the tourism boom for the Grand Strand. Constructed in 1910, the grand hotel was demolished in 1974 to "make room for new development."

**Right:** A bird's-eye view on one small section of the burgeoning Carolina Forest development between Conway and Myrtle Beach.





The 1980s revealed the Grand Strand's sharpest transformation, and the growth has gone almost uninterrupted ever since. In 1989, Myrtle Beach was named the sixth fastest-growing metropolitan area in the United States by the American Demographics magazine. In 1995, the same magazine ranked the Myrtle Beach area second in the nation in projected population and employment growth for the next 10 years.

That projection was just a hint of the nonstop growth in the popularity, prosperity and population increase that is being experienced by Myrtle Beach and



the Grand Strand area today. As the source of electric power, Santee Cooper has been a major factor in contributing to this phenomenal growth and development.

One thing that seems to stand out is that the challenges faced today in serving this ever-expanding customer base are a lot different than those faced in days gone by.

"When I think about how we used to respond to requests for new service, I realize how growth has affected our

operations," explains Zack Dusenbury, Santee Cooper's vice president of retail operations. "As more demands have been put on Santee Cooper, to run more and more lines, hang more and more transformers, put up more and more poles, and provide more and more services, many adjustments had to be made," says Dusenbury.

He notes that, at one time, the entire Grand Strand had only one line crew service center, where trucks were stocked and employees prepared daily for line

**Top:** Another single-family home nears completion, among the thousands under construction along the Grand Strand.

**Above:** Customer Services Representative Deborah Allgood accepts a bill payment at the Myrtle Beach retail office. Santee Cooper has experienced a whopping 45 percent increase in retail customers over the past decade — from 99,787 to more than 145,500.

work. Now, three service centers dot the strand alone, not including inland areas. The centers are located strategically to ensure response to new growth and efficient system maintenance.

"As the area grew and more challenges faced us, more and more of our operations changed," says Dusenbury. One example is the way in which customers are billed. "In days gone by, the customer's meter was read by hand and the billing amount was hand calculated as well. Then came data processing cards that were trucked to Moncks Corner where power usage calculations were read by a computer."

In 1995, Santee Cooper hit the 100,000-customer mark, and the meter reading and billing mechanisms really had to change. Billing and collecting went online, and now



meter readings are taken electronically and transmitted via fiber optic cable or microwave. "Meters read today are billed tonight," Dusenbury notes.

Each year, as more and more tourists visit and homes and businesses are added, Santee Cooper's distribution system also grows.

"We're adding the equivalent of one distribution substation each year to keep up with growth," says Furman Williamson, manager of distribution services.



**Top:** Giant construction cranes are familiar sites along the Atlantic shoreline as hotel and condo building continues at a record pace.

**Left:** Expansion of resort properties such as Marriott's OceanWatch Villas at Grande Dunes are providing the additional rooms needed for vacationers to the Grand Strand.



Williamson explains that distribution-planning personnel just completed a 10-year plan that outlines how, when and where facilities must be constructed to accommodate growth.

“Not only do circuits, feeders and substation facilities have to be added to accommodate the growth, but plans for our existing system improvements must be made as well,” explains Williamson. “Our new customers expect and deserve reliable power, when and where they need it.”

With explosive Grand Strand growth, Dusenbury has seen something else change. “We’re dealing with a lot of big box stores now, like Lowe’s and Home Depot, as well as nationally known residential developers,” says Dusenbury. Residential subdivisions



**Top:** The Heritage Collection of Lights was installed as part of the infrastructure for redevelopment of the former Myrtle Beach Air Force Base property. It includes retail, residential and commercial development. **Above:** New medical facilities such as the Waccamaw Community Hospital near Murrells Inlet support the growth of the expanding population of residents and visitors to the Grand Strand.



no longer have just 200 homes but some now have as many as seven phases that include thousands of single- and multi-family homes, along with commercial development. These changes have brought about a huge increase in the number of customers. Today, Santee Cooper has close to 145,500 retail customers, with the largest portion in Horry and Georgetown counties. Ten years ago, that number was 99,782, a 45 percent increase.

Much of the growth is taking place in the Carolina Forest area, a development located between Myrtle Beach and Conway, just off U.S. Highway 501.

More than 7,000 Santee Cooper

customers already live in Carolina Forest, and the numbers are growing daily.

“We keep crews working all the time in Carolina Forest,” says Williamson.

Another growth area is the recently opened Coastal Grand Mall, near the Myrtle Beach International Airport. It includes more than 1.5-million square feet and 28 outparcels of commercial space. Santee Cooper’s investment in the



Line Technician Dennis Ward installs underground service to one of the newly constructed homes near Myrtle Beach. Since the mid ‘80s, all new residential and commercial developments have been provided underground service.

infrastructure to serve the mall was approximately \$1 million and included 28,000 feet of underground wire, 21 transformers and 11 switchgear.

Other areas along the Grand Strand experiencing rapid growth include:

- the former Myrtle Beach Air Force Base, which will feature approximately 3,000 new residences and a unique mix of retail customers;
- Waccamaw Neck, with large developments such as Prince Creek, The Reserve and Alston Plantation; and
- North Myrtle Beach, which is seeing significant growth, especially along the oceanfront.

An ever-present challenge is keeping up with the demands of the developers who request the largest portion of new services. Developers may provide as little as a two-month notice on their request for power for a large development. Sometimes the developer’s schedule or needs change, or weather may affect their plans, says Williamson. No matter what the needs or time frame may be, line crews are shifted or shuffled to accommodate the customers.

At the same time new customers are being connected, massive projects are taking place throughout Santee Cooper’s service area to convert overhead utility lines to underground. Much of the development taking place along the Grand Strand is high-end and is attracting affluent visitors and residents. Underground utilities are a big plus for this market.

| Grand Strand Population Growth          |              |          |                   |          |
|---|--------------|----------|-------------------|----------|
|   | Horry County | % Growth | Georgetown County | % Growth |
| 1970                                    | 69,992       |          | 33,500            |          |
| 1980                                    | 101,419      | 45       | 41,461            | 24       |
| 1990                                    | 144,053      | 42       | 46,302            | 12       |
| 2000                                    | 196,629      | 36       | 55,797            | 21       |
| 2005*                                   | 215,850      | 10       | 58,300            | 4        |
| 2010*                                   | 239,020      | 11       | 61,770            | 6        |
| * Projected. Source: U.S. Census Bureau |              |          |                   |          |





Though Santee Cooper began installing all new services underground years ago, many areas wanted to convert existing overhead lines. The expensive work is being done throughout Santee Cooper’s service area through unique funding provided in conjunction with municipal franchise agreements.

**Technology Makes a Real Difference**

With the conversion project has come a tremendous amount of work and coordination. “From design, to obtaining easements, to construction, the conversions have

been huge undertakings—and at the same time, the traditional customer service work continues,” says Williamson. “Take a look in Myrtle Beach, along Ocean Boulevard and up Mr. Joe White Boulevard, and you are convinced. All the utility lines including TV, cable and



telephone are now underground, and the brick pavers and landscaping have enhanced the view and the business environment.” Conversions are also taking place in Conway, Loris, Moncks Corner and North Myrtle Beach.

“Technology has made a real difference,” says Dusenbury as he describes the challenge of serving such huge numbers of new customers. “The credit goes to executive management for their foresight in investing in technology that enables employees to keep up with the dynamic growth. Add employees who are innovative and have the knowledge to put that technology to use, and you have a winning combination.”

Dusenbury lauds the computer systems, software and advances added in the last 10 to 15 years to ensure customers’ needs are met and an adequate and reliable supply of power is available.

### How will Growth Impact the Future?

Dusenbury, who has almost 37 years at Santee Cooper under his belt, sums it all up.

“We supply a vital service. Nothing happens these days without electricity. The biggest challenge we face is to continue to address the changing needs of the communities we serve. We can never impede what the community wants to become, but rather, we must help propel it to what it wants to become. That has been, and will continue to be, a pretty awesome responsibility for us.”

What’s the measure of the success? Dusenbury answers quickly: “It’s our excellent customer satisfaction, our low-cost power and our high reliability,” says Dusenbury proudly. “Our employees have made the difference. I know I’m a little biased but there’s none better. As this area continues to grow, Santee Cooper employees will continue to meet the challenge, and we’ll all just hold on and enjoy an exciting roller coaster ride.”

**Opposite top:** More residents, more visitors and more growth mean the need for more highways. New bypasses, boulevards and interchanges such as this one in the north end of Myrtle Beach have been added over the last couple of years to improve traffic flow.

**Opposite bottom:** High rise construction along the Grand Strand.

**This page top:** Coastal Grand Mall, constructed in 2004, is one of the Grand Strand’s largest shopping and entertainment venues.



*“We can electronically design the layout for an entire subdivision. We have a work management system that helps us track service orders and a Geographic Information System to map out the location of every pole and every pad-mounted transformer on the distribution system. An Interactive Voice Response system allows us to handle over 6,000 incoming calls per hour. Where would we be if we hadn’t made those changes to keep up with growth?”*

Zack Dusenbury  
Vice President of Retail Operations



# JW ALUMINUM: THE KING OF FOILS

*A pot of Eight O'Clock coffee is made to start the day.*

*At lunchtime, a pouch of StarKist tuna is opened for lunch.*

*In the afternoon, a stick of Trident sugarless gum is shared.*

*In the evening at home, a can of Pringles potato chips is enjoyed by a family, whose cupboard and refrigerator contain products such as Philadelphia cream cheese, Peter Pan peanut butter, Mott's applesauce and a Cracker Jack box.*

What do these products have in common?

The answer is in the package, or wrapping. From Kool-Aid packs to Taco Bell hot sauce, these common items have a thin aluminum-foil product made at two of the three manufacturing facilities operated by JW Aluminum, whose corporate headquarters and largest melting and rolling facility are in Berkeley County, just north of Goose Creek.

Inside the 400,000-square-foot facility that employs more than 400, large melting furnaces with temperatures eclipsing 1,200 degrees

Fahrenheit melt aluminum in a 24-hours-per-day, seven-days-per-week operation.

The aluminum source is everything from recycled soft-drink cans and expired license plates to car hubcaps and scrap siding.

It arrives daily on tractor-trailer trucks.



**Above:** President and Chief Executive Officer Don Kassing holds a coil of fin stock, a major product using JW Aluminum foil.

**Right:** Twenty-five thousand pound rolls of aluminum foil ready for finishing.





“We’re one of the largest aluminum recyclers in this part of the country,” says

Don Kassing, JW Aluminum’s

president and chief

executive officer for the

last three years. “We can

melt a wide variety of

scrap aluminum. We buy

ingots and various shapes

and grades of scrap.

Aluminum is an amazing metal and can be recycled again and again.

Everything we do at this plant is planned and executed from the

perspective of the potential impact on the environment. We’ve strived

to work closely with DHEC and Berkeley County.”

The typical end-products are large coils of aluminum sheets

of varying thickness, precisely manufactured to the customer’s specifications.

Beyond the grocery store shelf, a good example of where you can find JW

Aluminum’s product is in the heating

and cooling industry. Modern heat

pumps and air conditioners require

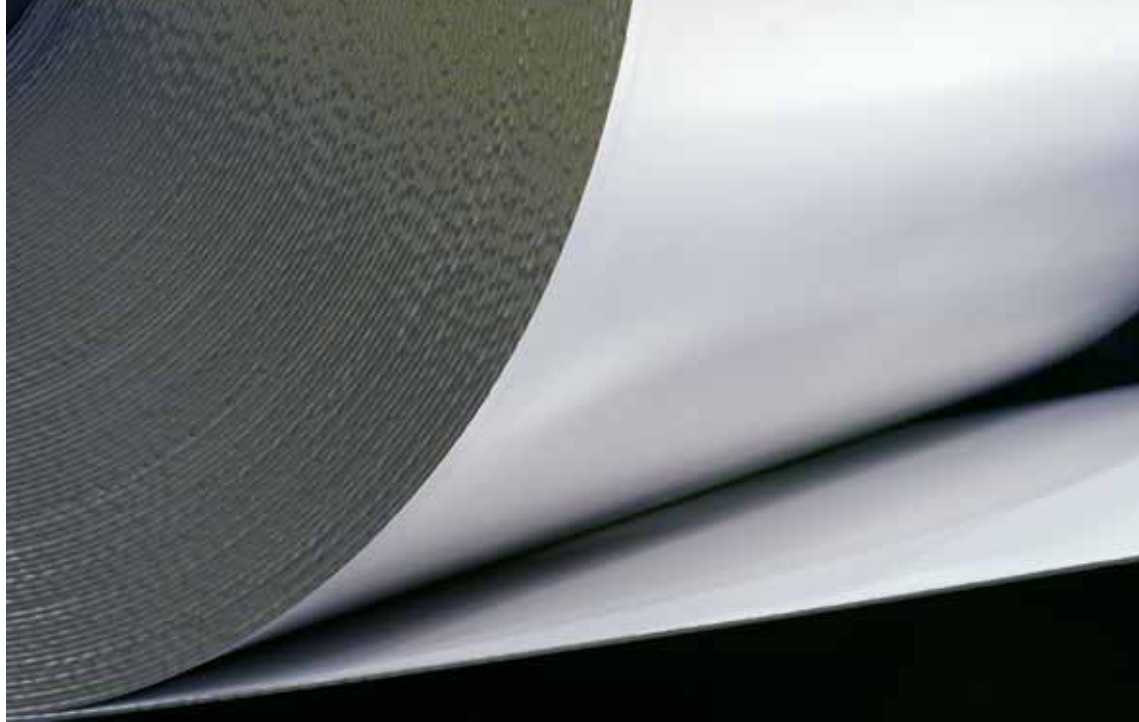
something called “fin stock,” aluminum

that is finned to allow proper heat

dissipation on a unit’s major components.

**Above right:** Foil is produced in varying thicknesses to meet the customers’ specifications.

**Right:** Mike Edmund, a rolling-mill operator, controls the lift of a finished roll of foil at the Mount Holly plant.



*Close up of some of the scrap aluminum that gets recycled into a new product.*

This product comes bare, or coated. Coating is a big part of the company’s business, and it can be done in many colors, patterns and textures, or even two-sided.

JW Aluminum is a big supplier of automotive heat-shield materials, which are commonly found lining automatic transmissions in cars and trucks. Roofing, guttering and downspouts are usually made out of aluminum and JW Aluminum is a major player in that arena.

They also make products for underground telecommunications cable wrap. Your newspaper could have been printed thanks to JW Aluminum, maker of the coiled sheet-gauge aluminum that is made into lithographic plates.

About 120,000 tons of aluminum leaves the door annually at JW Aluminum’s Mount Holly operation, which has been in business in Berkeley County since 1980.

### It all Began with Jim Walter Homes

JW Aluminum traces its roots to Tampa, Fla. and one man, James Willis Walter. His place in Florida history is secure and he stands as one of the Sunshine State’s greatest business success stories.

A Navy veteran of World War II, Walter was not only a visionary, but also was the right man at the right time. Responding





to pent-up demand for housing, Walter took \$395 from his savings account. He combined it with \$500 he had borrowed, and borrowed another \$100 to buy a lot. He then built a “shell” home and made a profit of \$300.

That was 1946, and Jim Walter Homes soon began taking off. Building the “Jim Walter Way” swept the Southeast. A cornerstone of this



approach was that Jim Walter Homes were simple, yet solid in design and construction. The firm promoted that it could finance the whole deal. What’s more, Jim Walter could sell you homes completed to various stages of construction, anywhere from a turnkey product to something a savvy do-it-yourselfer could finish.

It worked. By 1960, Walter and his successful business model were featured in The Wall Street Journal, Time, Business Week, Barron’s and other publications. Two years



Reggie Joyner, finishing department slitter operator, verifies the thickness of a foil order to assure quality control.

later, Jim Walter Corp. as it was then known, acquired Celotex Corp, which made fiberboard. Jim Walter Corp.’s stock was listed on the New York Stock Exchange in 1964.

Jim Walter Corp. entered the 1970s ranked no. 297 in the Fortune 500, and sales topped \$623 million. By decade’s end, it had acquired U.S. Pipe & Foundry Co., a Birmingham, Ala. firm that made ductile iron pipe. Jim Walter Corp. held firms that were as diverse as coal mining and carpet manufacturing.

### Coming to the South Carolina Lowcountry

The Mount Holly plant began in 1980 as Jim Walter Metals, in the decade when Berkeley County began to shed its agrarian, rough-hewn image and started emerging as a manufacturing-friendly locale eager to welcome economic diversity.

Alumax of South Carolina, a giant aluminum-smelting plant, actually set the stage for JW Aluminum’s arrival. Today, it’s part of Alcoa and operates under the name Alcoa-Mt. Holly, employing about 600 workers.



construction and home-building fields, and then began evolving into the light-gauge sheet and the bare and coated-foil product lines.

In October 2003, Walter Industries, then a \$1.5 billion company, announced it was selling JW Aluminum Co. to Wellspring Capital Management, a New York-based private equity firm, for \$125 million. The deal was done by the end of that year.

While JW Aluminum was a soundly performing subsidiary, it simply didn’t fit Walter Industries’ long-term business strategy. Wellspring owns two familiar brands: the Edwin Watts golf superstore chain and Lionel, the venerable toy electric-train manufacturer familiar to millions of baby boomers.

“They’ve been good for us,” says Kassing, who arrived at the plant in January 2002. “They’re just like us, solid and with a great future.” The Mount Holly plant has four



**Right:** Ingots from neighboring Alcoa Aluminum are coded and await their introduction to the smelting furnace (shown above), where they become a part of the alloy mix.

“We actually co-located here after Alumax arrived, and we know those folks and they know us,” Kassing says. “We’re not competitors. They make different products. They’ve been good for Berkeley County and we like to feel we’ve been good for the county, too. Being a good corporate citizen is important to us.”

The plant first produced coils of aluminum sheet to be used in the





different rolling mills, but they're not "dedicated" lines that make a single product.

"We're more like a 'job shop,'" Kassing says. "And what makes it

great here are our people. They'll do whatever it takes to

get the job done. Our work ethic is second to none.

We like to hire ex-military, and we draw employees from

as far away as St. George and Orangeburg. We have some

very, very bright people here."

He's utilized

the resources of

Trident Technical

College for supervisory  
and diversity training.

Employees use a

"flex-crew" schedule. With

good pay and benefits, workers tend to  
start young and stay there, with a turnover  
rate around 3 percent.

These key ingredients result in annual  
gross sales of more than \$400 million,  
representing 350 million pounds of  
aluminum sold from all three operations.

The firm is among 32 industrial customers served directly by Santee Cooper  
in 10 South Carolina counties. Its yearly power costs top \$8 million.

"Santee Cooper power is very reliable," says Kassing. "We know if we have  
concerns or issues, Santee Cooper stands ready to work with us."

Quality is important, evidenced by JW Aluminum's ISO 9000 certification in  
May 1996, and its subsequent attainment of ISO 9001 four years later.



*Finishing Superintendent Larry Sammons  
and Russ Penley, vice president of operations,  
check foils awaiting final slitting.*

JW Aluminum has expanded. In April 2004, the company acquired some of  
Alcoa's plants and aluminum-rolling facilities in St. Louis, Mo. and Russellville,  
Ark. The products of these plants will largely go into making flexible packaging  
products and building more efficient heat pumps.

A lot of JW Aluminum's product will become Trane heat pumps, which  
have components made right here in South Carolina.

Foil products can also expand JW Aluminum's market penetration  
due to these acquisitions, including the pharmaceutical and flexible  
packaging industries.

In April 2004, the Charleston Metro Chamber of Commerce  
presented JW Aluminum with the Overall Sustainable  
Achievement Award "in recognition of  
significant environmental and community  
stewardship in the areas of energy efficiency,  
procurement practices, product development,  
quality of workplace life, waste-emission reduction  
and water conservation."

Speaking of water, the plant is served by the Berkeley  
County Water and Sanitation Authority, which uses the  
Santee Cooper Regional Water System as its water source.

With worldwide market penetration and expansion  
in the Midwest, the firm's continued success originates  
right here in South Carolina.

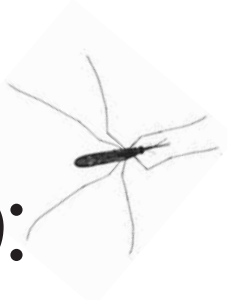
"Mount Holly is the heart of JW Aluminum,"  
Kassing says. "It's our core plant and we're proud this  
facility is our corporate headquarters."

For more information about JW Aluminum, visit their Web site at  
[www.jwaluminum.com](http://www.jwaluminum.com).





# WAGING WAR ON THE MOSQUITO: AN ONGOING CHALLENGE



*This time of year is typically dedicated to going barefoot, loading up the picnic basket, applying sunscreen and enjoying outdoor activities. But for Santee Cooper's vector management personnel, it's pulling on the snake boots, strapping on the backpack sprayer and putting on insect repellent. For them, controlling mosquitoes is the mission of the season.*

## History, Mission and Malaria

Providing low-cost, reliable power to its customers is an enduring legacy for Santee Cooper. But almost equally important has been the concern for the health and well-being of the public, beginning with involvement in mosquito control in the late 1930s during construction of the Santee Cooper Hydroelectric and Navigation Project.

At that time, 50 to 60 deaths each year around the area where the lake system would be developed were attributed to malaria, the vector-borne disease transmitted by the Anopheles mosquito. With Santee Cooper's development and practice of a mosquito-control program, malaria was eradicated from areas around the lakes by the early 1950s.

Today, the Vector Management Program, part of Santee Cooper's Environmental Resources unit, continues this critical work for the public health, with mosquito abatement comprising 99 percent of the unit's mission.



**Above:** In this early 1940s photo, workers are shown spraying for mosquitoes in a heavily infested area along U.S. Highway 52 near the historic Santee Canal.







### Surveillance, Trapping and Identification

“The rubber hits the road when our guys are out there in the field doing the same sorts of things—surveillance, source reduction, spraying—that they’ve been doing for years,” states Vector Management Supervisor John Grant.

Mosquito control activities are carried out in five counties around Lakes Marion and Moultrie, which comprise approximately 160,000 acres and 450 miles of shoreline.

Mosquito surveillance takes many forms to determine if, when and where controlled treatment may be necessary.

### West Nile Virus, EEE and Testing

Traps are used for arbovirus surveillance and placed in locations where a high population of adult mosquitoes is present. The traps, which attract primarily female adults, use dry ice and light as attractants. This works well since the mosquitoes searching for a blood meal are attracted to the carbon dioxide exhaled by humans and other animals.

The Gravid Trap, another collection device, uses a highly organic solution to attract females that are preparing to lay their eggs.

“If, during a Gravid Trap test, it is discovered that a female mosquito has laid her eggs, then we know she’s had a blood meal,” explains Technical Associate Kathy Tallman. “This means there is a greater potential that she has bitten a bird and may

have contracted West Nile Virus. The Culex genus is targeted because it is the most likely to carry West Nile Virus.”

“West Nile Virus is Vector Management’s biggest concern,” says Grant. “Surveillance, trapping, identification and testing are performed with that in mind. West Nile is especially dangerous to animals and people with compromised immune systems. Children and the elderly are at greatest risk.”

In-house testing of adult mosquitoes provides results in about 30 minutes



**Above:** In search of mosquito larvae, Vector Management Supervisor John Grant examines a sample of water dipped from the waters of Old Santee Canal Park.

**Right:** Technical Associate Kathy Tallman checks a Gravid Trap for female mosquitoes that may have laid their eggs.

identifying whether West Nile Virus or Eastern Equine Encephalitis (EEE) is present. Adult mosquitoes are also frozen and sent to the S.C. Department of Health and Environmental Control for more extensive and precise testing.

Vector Management personnel are always on the lookout for dead birds, especially crows and blue jays, which seem to be susceptible to the virus, explains Grant.

“These birds are safely removed and sent to DHEC for testing.”

John Inabinet, Santee Cooper’s administrator of environmental resources, says Santee Cooper has been on top of the West Nile issue since it was identified as being in the area.

“We cooperate and share information with DHEC. We have sent and will continue to send adult mosquitoes and dead birds for testing,” Inabinet says. “We take this seriously. Monitoring West Nile is simply an added responsibility in our overall mission when it comes to mosquitoes.”

In 2002, DHEC made one of the first positive identifications of West Nile Virus in South Carolina, which came from an infected mosquito collected by Santee Cooper in the Cross area. Earlier, a dead bird had been found in the area,

**Right:** Technical Assistant Tim Hutto opens a New Jersey light trap to make a mosquito count.



creating suspicion that West Nile Virus might be present.

Santee Cooper’s vector management unit is as vigilant in their pursuit and identification of mosquitoes carrying EEE.

“Encephalitis has been around for years and could resurface at any time,” says Grant.

“Horses are usually the victims of the disease, but it can be very dangerous, and even fatal to humans.”

Samples collected in 2003 near the Thornley subdivision on Lake Moultrie





tested positive for EEE. Santee Cooper responded by intensifying all adult and larvae mosquito-control efforts, including immediate aerial spraying of the area.

### Life Cycle, Types, Range

Nearly 60 types of mosquitoes have been identified in South Carolina, and Vector Management has seen most of them around the lakes at one time or another. However, about 10 species, appearing at different times of the year, are rated as a problem.

Mosquitoes lay their eggs in, or near, standing water and flood pool areas, which are perfect nurseries. Under the optimal conditions of water, temperature, oxygen and bacteria, these eggs will hatch in just a few days. However, some types of eggs are laid in dry, shallow depressions and can remain dormant through a drought, hatching years later when they become wet.

Grassy pool mosquitoes are particularly troublesome for vector management, especially in the fall season following a tropical storm. They are very aggressive biters, and can quickly complete the life cycle from egg to adult in as little as four to five days.

This aggressive lifecycle means that, following larvaciding, an aerial adulticide application may be necessary.

Depending on the type of mosquito, the flight range may vary anywhere from 100 feet to 20 miles. The Asian Tiger mosquito, for example, is one of the most common backyard mosquitoes, with a flight range of only 100 to 300 feet. It is a difficult species to treat because it is a daytime biter. The best defense against this pest is to empty potential breeding habitats around the home, such as birdbaths, pet water bowls, old tires or anything else that will collect and hold water.



*Hutto checks a larval dip near the shoreline of Lake Marion.*

### Habitat, Predators

Vector Management's concerns grow when extended dry periods are followed by heavy rains, which fill swamps, grass-land pools, ruts, ditches and just about anything that will hold water. All of these become potential mosquito breeding grounds.

Swampy areas are not always the most prolific breeding grounds because of the presence of natural predators such as dragonflies and other aquatic invertebrates that consume mosquito larvae.

Surprisingly, the best breeding grounds are man-made. For instance,

ruts or ditches that fill provide standing water, which is a perfect breeding ground free of natural predators. Since mosquitoes seem to populate these areas more quickly than natural predators, a higher mosquito population is the result.

### Treatment

Although the primary season for mosquitoes is generally April through October, Vector Management has treated for mosquitoes as early as February and as late as November.

Generally, 30 minutes before and after sunrise, and 30 minutes before and after sunset, are the most active times for adult mosquitoes, thus the best time for treatment.

Annually, Santee Cooper's Vector Management treats an average of 60,000 acres by land and 25,000 to 50,000 acres by air for adult mosquito control.

They use EPA-approved, environmentally safe larvacides, adulticides and herbicides. All chemical restrictions are followed carefully, and all employees who spray are licensed with the S.C. Department of Pesticide Regulation. Santee Cooper uses the latest technology to carefully monitor all applications.

"What we basically do is identify where the mosquitoes and their breeding grounds are, and go after them," says Grant. "Source reduction, such as unclogging drainage ditches or reducing grasses through cutting or with herbicides, is the best way to control mosquitoes. In addition, surveillance determines their location and the necessary treatment."



**Above:** Equipment Operator Leroy Bennett enters field data into a personal data assistant.

**Below:** Hard to reach areas are treated using aerial-spray application.





Larvaciding is the most effective form of treatment. Woodlands, man-made pools, ditches and the lake’s edge are treated on foot, using backpack-mounted hand sprayers. Aerial spraying covers a greater area, much of which cannot be reached on foot.

Adulticiding often follows larvaciding, utilizing a spray truck for ground application in specific areas, and aerial spraying is used for larger areas. Both present a challenge in treating this moving target.

A spray truck releases an odorless pesticide that effectively uses only 1.6-ounces per acre. Tiny droplets, which remain airborne for five to six minutes, fall to the ground and detoxify.

The Mosquito-Fighting Alliance

Vector Management provides mosquito control in Berkeley, Clarendon, Orangeburg, Calhoun and Sumter counties, and it works hard to promote positive relationships.

“We interact with county agencies’ mosquito-control departments,” says Grant. “Our lines of responsibility overlap in some areas, but we communicate to make sure that we are not treating the same area twice.”

Santee Cooper has a reputation as one of the leading mosquito-control operations in the Carolinas, and is a prominent member of the S.C. Mosquito Control Association. The association, comprised of mosquito-control professionals across the state, provides a communication network to share information regarding the arbovirus and innovative forms of mosquito surveillance and control.

Mosquito Surveillance around the Lakes

**Larvae Inspections.** *In subdivisions around the lakes, long-handled cups are immersed in standing water to check for larvae.*  
**Light Traps.** *At 20 locations around the lakes, the traps are checked about three times each week to monitor adult mosquito populations.*  
**Landing-Rate Measurements.** *For a one-minute period, mosquitoes that have landed on exposed skin are counted.*  
**Requests for Spraying.** *Requests for mosquito spraying made by local residents are assessed by Vector Management to determine if treatment should be required.*

Santee Cooper’s Vector Management personnel are in the field every day, working hard to build strong, valuable relationships with residents and making the places they live, work and play more safe and comfortable.



“We encourage residents to call when they have a mosquito problem,” says Grant. “We investigate to determine if there is simply a backyard problem or a wider spread issue. We appreciate the calls because they provide a significant form of surveillance for the 50 subdivisions we serve.”

“We are continuing the legacy of improving and maintaining the public health,” says Grant. “We’ll never be able to completely kill off the mosquitoes, something we really don’t want to do anyway. They’re part of the ecosystem, part of the food chain. We simply want to control them, prevent disease and make life better for people.”

West Nile Virus and Eastern Equine Encephalitis are here to stay. And as the world becomes smaller and global diseases become more of a threat, other vector-borne diseases may appear in the future.

Mosquito control has come full circle from the early days of the Santee Cooper project when malaria was so prevalent. The challenge for Vector Management’s army of mosquito fighters continues.

The Mosquito and its Bite

There are about 2,500 species of mosquitoes worldwide. Those that belong to the genus Anopheles, Culex and Aedes are the ones commonly responsible for biting humans.

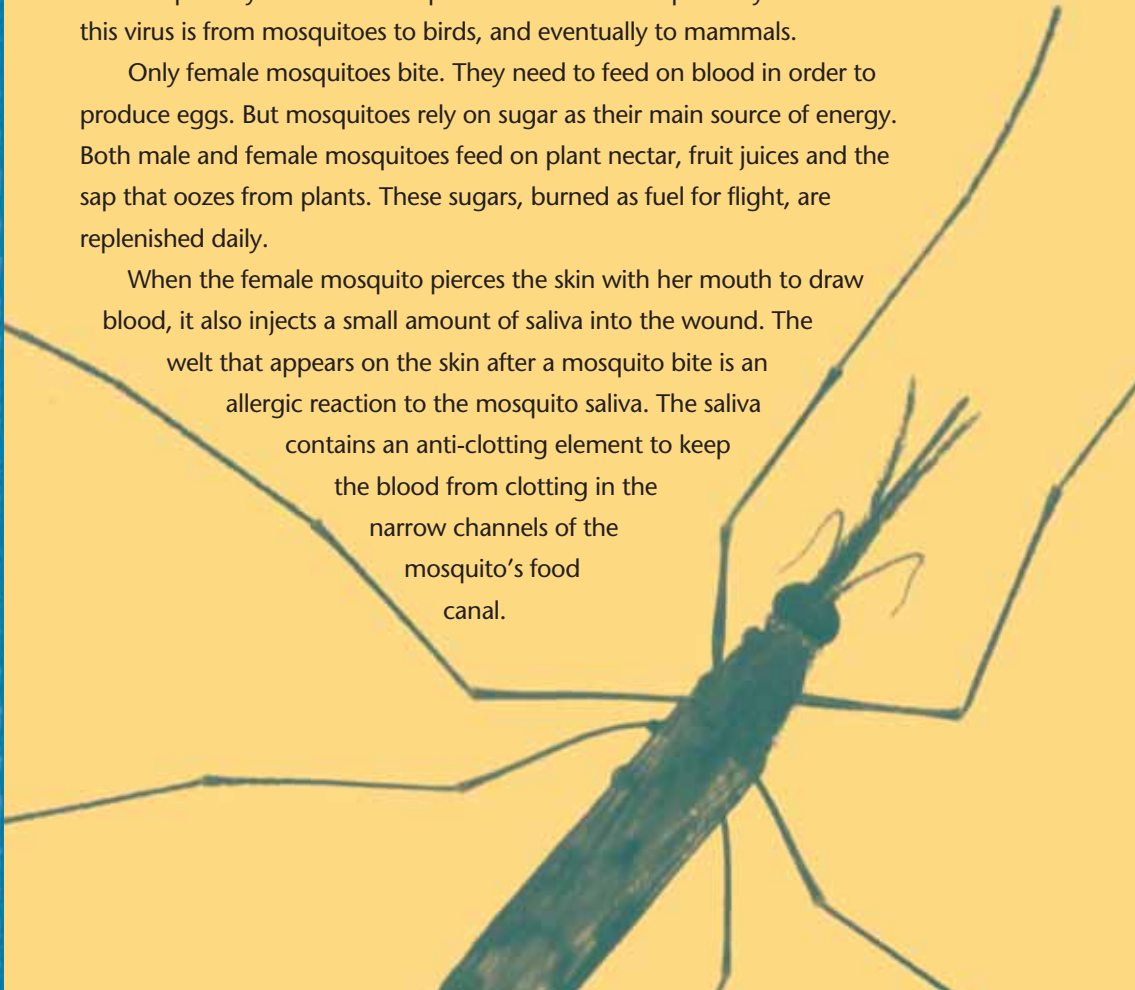
The Aedes mosquitoes tend to search for blood meals early in the morning, at dusk and into the evening. Some member species of this genus are known to be daytime biters, especially on cloudy days and in shaded areas. They prefer to bite mammals like humans, and are strong fliers and persistent and painful biters.

Members of the Culex genus are known to attack at dusk and after dark. The females of this group readily enter dwellings for a meal of blood. They prefer to bite birds and are known as weak fliers. But they are also painful and persistent biters. They are the primary vectors of encephalitis.

When the *Culex genus* mosquitoes bite infected birds, it makes the mosquitoes become primary vectors of encephalitis. The common pathway for transmission of this virus is from mosquitoes to birds, and eventually to mammals.

Only female mosquitoes bite. They need to feed on blood in order to produce eggs. But mosquitoes rely on sugar as their main source of energy. Both male and female mosquitoes feed on plant nectar, fruit juices and the sap that oozes from plants. These sugars, burned as fuel for flight, are replenished daily.

When the female mosquito pierces the skin with her mouth to draw blood, it also injects a small amount of saliva into the wound. The welt that appears on the skin after a mosquito bite is an allergic reaction to the mosquito saliva. The saliva contains an anti-clotting element to keep the blood from clotting in the narrow channels of the mosquito’s food canal.





# CYPRESS GARDENS: AFTER 73 YEARS, IT'S STILL A GEM

**Cypress Gardens, one of Berkeley County's premier attractions for tourists and locals alike, has meant many things to many people throughout its long history.**

To baby boomers, it may have been where one's parents or grandparents took them in the springtime, enthusiastically proclaiming to unappreciative young ears, "It's time to go see the flowers!"

To today's school children, it's a popular destination for field trips. There they can encounter a giant tortoise, gawk at the largest public display of crocodiles in the Southeast, marvel at the colorful splendor of butterflies in the special aviary, or see native fish swimming in their freshwater settings within a giant aquarium.

To young adults, it can be the place to take a date for quiet solitude and a romantic boat ride through a black-water cypress swamp. One thing can lead to another and yes, at Cypress Gardens, they even do weddings.

And to Hollywood, it has become a filmmaker's movie set, consistently on the Lowcountry short list when going on location. Mel Gibson filmed some of "The Patriot" there, and a brief scene shot there in 2003's "Cold Mountain," starring Nicole Kidman, also made it to the silver screen.

Cypress Gardens, located off the Cooper River between Moncks Corner and Goose Creek, has become this and much more in the 21st century. The watery environs, now complemented with appealing attractions for visitors of all ages, have through the years struggled, survived and today thrive as a Lowcountry showpiece.

**Above:** Julia butterfly.

**Right:** Elementary school students on a field trip from Mount Pleasant look for critters at the edge of the cypress swamp.





“We are Berkeley County’s only ‘county park,’” says Dwight Williams, director of Cypress Gardens since 1996. “What is unique about the gardens is that it is a place that can combine an educational experience with hands-on learning for school children. We can teach to second- and third-graders things such as insects, habitats and species adaptations. We get feedback from teachers and use the feedback to improve the experience. That makes it a popular field trip destination.”

### Colonial Beginnings

Cypress Gardens can trace its origins to the time before the United States even existed. Today’s 170 acres comprise lands that were part of a large and successful rice plantation called Dean Hall, owned by Scotland native Sir Alexander Nesbitt.

Nesbitt acquired Dean Hall Plantation around 1720, and soon after that he arrived in Charleston to seek his fortune in the New World. By 1725, he completed the Nesbitt House, a unique two-story structure that survives today in Moncks Corner.

In 1969, Nesbitt House was moved 10 miles to Moncks Corner, and is the headquarters of the Berkeley Chamber of Commerce. It was used as the Cypress Gardens

office until 1963. According to information published by Cypress Gardens in the 1980s:

*“Nesbitt was a prominent rice planter, slave trader and merchant. It is probably under his tenure that the swamp, now known as Cypress Gardens, was first used. Freshwater ‘reserves’ were an integral component in the growing of rice in areas where the river water was sometimes salty from storms or tides. It was in this capacity, as a freshwater reserve, that the swamp at Cypress Gardens was first used. When salt was detected in the ricefields on the Cooper River and Back River, the fields would be*

*closed off to the river water and water would be brought through ditches from the ‘reserve’ to the rice fields, saving the crop.”*

The successful growing of rice created impressive fortunes for Lowcountry planters. The heyday for this crop came after indigo, but predated the large-scale cultivation of cotton that began in the 1790s. “King Cotton” peaked in South Carolina prior to the Civil War.

In 1753, Nesbitt passed away and was buried in the cemetery of St. Philip’s Episcopal Church in Charleston. His widow, Dame Mary Nesbitt, lived at Dean Hall Plantation and raised her two grandchildren.

### The Antebellum Era

Nesbitt’s sons apparently weren’t interested in the plantation and, in 1821, one of the grandsons sold Dean Hall to William A. Carson and his mother. Cypress Gardens’ literature states:

*“By 1827, they had completed one of the most beautiful and grand of the plantation homes on the Cooper River, officially named Dean Hall. Under Carson, the plantation thrived and Mr. Carson became one of the most respected rice planters in the Lowcountry. In 1842, John B. Irving wrote of Dean Hall in the book, ‘A Day on the Cooper River.’ ‘It resembles a well-ordered village more than a single plantation. The residence of the proprietor—the condition of the fields, the banks, the white and cleanly appearance of the Negro houses —*

**Above:** Zebra longwing butterfly, a coastal visitor to South Carolina, but common in Florida and further south.

**Right:** In the butterfly house, students get a close look at butterflies as they flutter by.

*the mill and thrashing machine in complete order, all excite a strong feeling of admiration, and stamp at once the proprietor as an experienced and skillful planter.”*

Slave labor provided the means that resulted in opulent, impressive mansions and estates that marked the plantation era in the Lowcountry and throughout the South. But war clouds were gathering, and secession talk began to dominate Southern politics. In 1856, Carson died and the estate ended up in the hands of Elias Nonus Ball.

Dwight Williams, director of Cypress Gardens.



A resident gator basks in the sunshine.





Carson's widow, Caroline Carson, was against seceding from the Union, which South Carolina did in 1860, the first state to do so. Carson was the daughter of James L. Petigru, who was also against the concept culminating in the formation in 1861 of the Confederate States of America. In May 2005, The Post and Courier of Charleston named Petigru "the greatest lawyer of antebellum South Carolina."

After the Civil War ended in 1865, Caroline Carson took a cue from her father's legal mind and sued to recover Dean Hall. Her legal position was that the Confederate bonds "for which Dean Hall had been sold 'were the illegal promissory notes of an unrecognized government and were not legal tender.'"

The widow Carson won her lawsuit, and she returned Dean Hall back to her family. It never regained its previous glory and in 1909, James Petigru Carson, William A. Carson's son, sold Dean Hall to Benjamin Rufus Kittredge. The modern era of Cypress Gardens was about to begin.

### Kittredge Establishes Cypress Gardens

A rich businessman from a well-to-do New England family, Kittredge wed a native Charlestonian, Elizabeth Marshall. They began to use the home as a winter retreat and hunting preserve. But soon, they were planting flowers—lots of flowers.

The Kittredges planted the rows of Southern magnolias that line Cypress Gardens Road on the way to the entrance of the gardens. Legend says that Kittredge had an epiphany of sorts that formed the basis of what the gardens were to become.

*A zebra longwing caterpillar on passionvine.*



The gardens' literature states: *"One day while hunting in the reserve, he spotted the reflection of a brilliant red maple flower in the still, black waters of the swamp. It is supposed that this sight provided the inspiration for Cypress Gardens. Mr. Kittredge's goal in building Cypress Gardens was to plant masses of shrubs, bulbs and trees that bloomed simultaneously in locations that allowed them to be reflected in the inky water, thus doubling the already brilliant color. His goal was to create a floral show unlike any other on earth."*

So in 1927, Kittredge hired 200 men who went to work, ridding the swamp-land of undergrowth, constructing paths and islands and repairing dikes. Then the planting began, with the azalea forming the ground floor of Cypress Gardens' flora. Many types were planted, including a variety called the "Duchess of Cypress Gardens," which was bred at an onsite nursery.

Although Kittredge knew other local horticulturalists, such as Norwood Hastie of Magnolia Gardens fame, it was Kittredge himself who laid out Cypress



*Woody! The male wood duck was injured by a dog as a duckling, hand raised and then became the first resident of the butterfly house eight years ago.*

Many people may wonder why the port city, and not Berkeley County, was given the Lowcountry jewel. The answer is really quite simple: Berkeley County had no experience or real wherewithal to operate such a tourist attraction. The vast county had few economic resources and only a rudimentary county government struggling to provide basic services. The county would take center stage later.

### Cypress Gardens Today

In September 1989, Hurricane Hugo devastated Cypress Gardens, changing the ecology in ways never before seen.

"We lost 12,000 significant trees," Williams says. "Every building, except one, was destroyed." Even before that, the consensus was that Cypress Gardens had simply lost its former glory. The city of Charleston had other projects on their horizon such as a baseball park and an aquarium.

"It was obvious this (Cypress Gardens) wasn't a priority," Williams says,

Gardens. While he didn't utilize architects or specialty designers, he did receive assistance from William Vardell, a Summerville engineer and the garden's first manager.

Daffodils, snowflakes, bluebells and atamasco lilies were also an important part of the landscape when in 1932 Kittredge opened his dream for the public. It didn't take long for the word to get around and, even from the early days, the ever-popular Cypress Gardens boat rides "were an immediate attraction."

They weren't boats at first, but instead, they were unstable canoes that couldn't accommodate many passengers. Kittredge, a former California winemaker prior to Prohibition, obtained redwood wine casks and made boats out of them.

In the 1930s, up to 75 people were employed at Cypress Gardens. These were welcome jobs in a distressed Berkeley County where little employment opportunities existed. Timbering, farming and moonshining were economic backbones, with the latter evolving into legendary status during the tough Depression era.

Kitteredge planted other showcase ornamentals such as daphne, a small evergreen shrub that features fragrant flowers and was imported from China. And in the 1940s, camellias joined the petal parade.

Mr. Kittredge died in 1951 at the age of 91, and his widow passed on eight years later. They are buried onsite. In 1963, their son Benjiman R. Kittredge, gave Cypress Gardens to the city of Charleston.



but quickly adds that the city “did the hard work on Hugo restoration,” which set the stage for acquisition by Berkeley County government in 1996.

“The goal of the county was to construct year-round attractions other than ornamental plants,” Williams says. Combine that goal with an enthusiastic chief executive in county government, and Cypress Gardens has been a true Lowcountry phoenix, rising from the devastation of a catastrophic hurricane to an attraction that now hosts 60,000 visitors annually.

“I am proud of Cypress Gardens and what Dwight and his hard-working staff have done here,” says Jim Rozier, Berkeley County supervisor. “As a youngster, I worked there and even then, I saw the potential to restore and enhance what we have in this resource. Some people say this is my ‘baby.’ I don’t mind that. We’ve tried to nurture Cypress Gardens, but really and truly, it belongs to the people. The Kittredges’ dream and legacy are ours to foster, nurture and develop appropriately, which I think we’ve done.”

Some examples of recent developments are:

- Butterfly House** — Opened 1997
- Freshwater Aquarium** — Opened 1998
- Reptile Center** — Opened 2001
- Crocodile Isle** — Opened 2004

These attractions aren’t garish exhibitions of the type that have given Florida road-sides a somewhat negative image.

“Ours is different because animal exhibits complement the natural swamp ecology,” Williams says. “Children and adults will learn something from visiting here.” The Breath of Spring Bluegrass Festival, Halloween in the Park and One Wild Weekend form signature events.

Then there is the conference cottage, Dean Hall, which can accommodate 250 people, a wedding gazebo, an impressive front lawn and five miles of trails.

The eternal beauty of the cypress trees, flowers and swamp beckon new generations. But one thing remains the same.

*A Broad-headed Skink suns himself to heat up for the day’s activities. The cold-blooded reptile requires the sun’s energy to warm his muscles.*

“The boat rides are still the biggest attraction,” Williams says.

One of the biggest advantages Cypress Gardens offers comes with its steady growth and development, says Williams.

“With the change of seasons and the addition of new exhibits and flora, every return visit provides you a different view of what is there, and new opportunities to explore and marvel at this great exhibition of Mother Nature.”



## NEWSOURCE

### Purchase a Santee Cooper Mini-Bond This Fall and You’ll be Investing in South Carolina’s Future

*Saving for retirement? Thinking about your child’s college education? Wanting to do something special for your grandchildren? Or, looking for a solid investment? Your answer may be a \$200 investment in a Santee Cooper Mini-Bond.*

A Santee Cooper Mini-Bond is an instrument that demonstrates the state-owned electric and water utility’s stable and financially healthy position, exemplified by the ratings given by three major rating agencies.

This year, Santee Cooper will offer mini-bonds from Sept. 29 through Oct. 24. The maturity dates and interest rates for this issue will be set in late September, just before the bonds go on sale. The bonds will be approved by the Santee Cooper Board of Directors at their Oct. 28 board meeting.

#### Why purchase

“We only sell the mini-bonds if there is a capital need for the dollars,” says Nan Cline, debt administrator and the Santee Cooper Mini-Bond Program coordinator.

Santee Cooper is committed to provide reliable, low-cost power to people all across the Palmetto State. Mini-bonds provide an opportunity for South Carolinians to purchase Santee Cooper bonds while generating funds for capital improvement projects.

#### The history

Santee Cooper first offered mini-bonds in 1988, with total sales exceeding \$17 million. This initial sale far surpassed expectations that ranged from \$1 to \$5 million.



#### Mini-bond specifics

Just like the 2004 offering, the 2005 mini-bond program will include two types:

- *Santee Cooper Capital Appreciation Mini-Bond in \$200 denominations.* Interest compounds and will be paid on the bond’s maturity date or upon early redemption. The interest is currently tax-free.
- *Santee Cooper Current Interest Bearing Mini-Bond in \$500 denominations.* Interest will be paid semiannually to the registered owner. The interest is currently tax-free.

“We want our customers, and all South Carolinians, to have the opportunity to purchase Santee Cooper bonds,” says Santee Cooper Treasurer Rod Murchison.

The sale of Santee Cooper Mini-Bonds provides a means to educate people about the value Santee Cooper adds to the state. “Mini-bonds allow us to have a one-on-one relationship with our bondholders,” says Cline.

#### How to purchase

Investors can purchase Santee Cooper Mini-Bonds in person or by mail. Completed order forms and payment must be received by Oct. 24. Go to [www.santeecooper.com/minibonds/](http://www.santeecooper.com/minibonds/) to get up-to-date information about the program. Orders forms can be downloaded beginning Sept. 28. E-mail questions to [scbonds@santeecooper.com](mailto:scbonds@santeecooper.com).

*Nan Cline  
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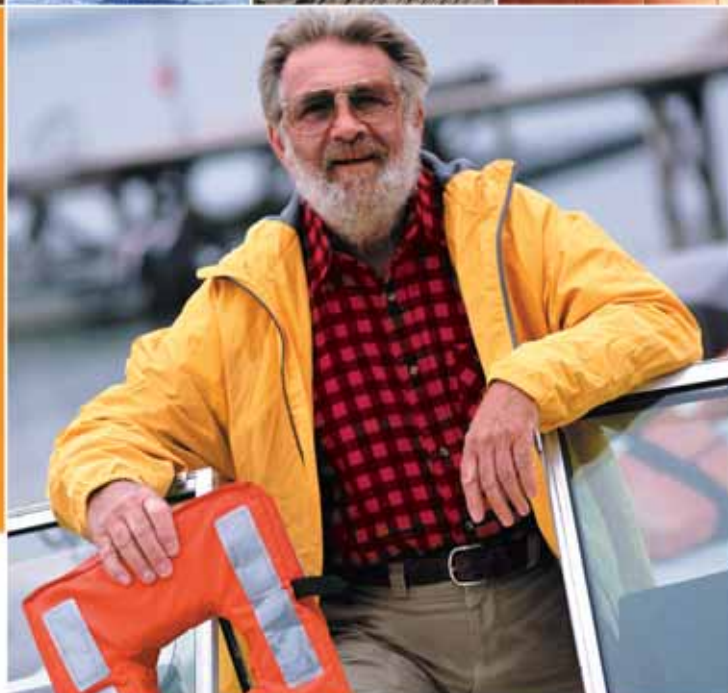
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**"I make sure my  
business stays afloat.  
I never go out  
without a life vest."**

Truman Lyon, Fishing Guide  
Santee Cooper Lakes



*Santee Cooper lakes Marion and Moultrie are the state's largest freshwater resource. Created to generate the power to lift rural South Carolina out of the Great Depression, they became the world's first landlocked striped bass fishery and home to a hundred secret swimming holes. Whenever you visit our lakes or any other body of water, be sure to respect them by not littering – and by playing it safe. Visit [www.scwaters.com](http://www.scwaters.com) for boating and swimming safety tips, and information on fishing, lakes navigation, guides, public recreational areas, dining and lodging, rentals, marinas, repairs and shopping. While you're online, explore links to all the ways Santee Cooper works to make life better for everyone in South Carolina.*

# scwaters.com

Visit [www.scwaters.com](http://www.scwaters.com) for more information  
on fishing and water/boating safety.

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